



COLONY OF SEYCHELLES

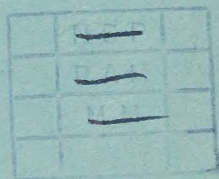
ANNUAL REPORT

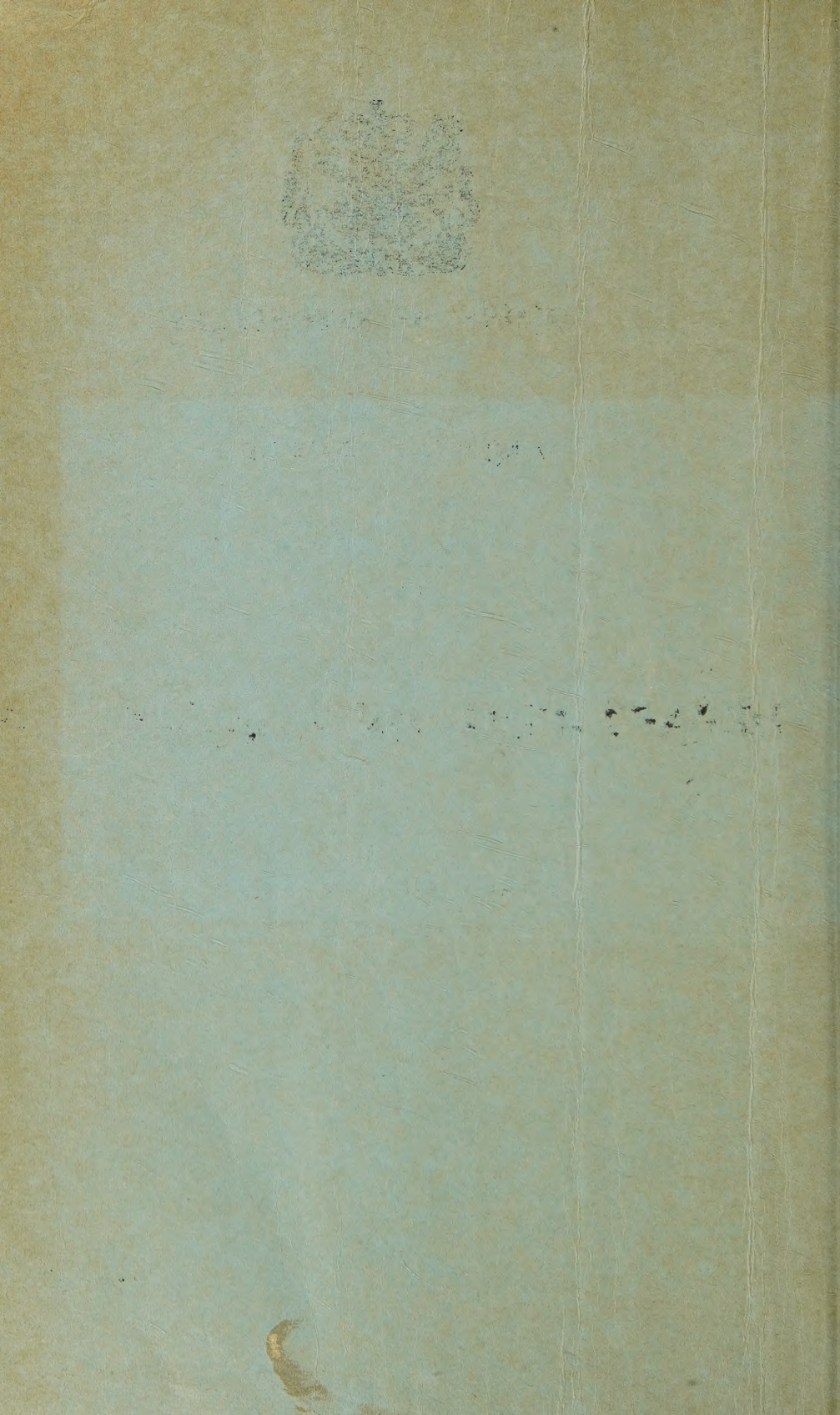
OF THE

DEPARTMENT OF AGRICULTURE

FOR THE YEAR

1960







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Copy received : 28.1.61

1st proof sent : 21.4.61

1st proof returned : 24.4.61

2nd proof sent : 24.4.61

2nd proof returned : 28.4.61

Published : 5.5.61

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Annual Report of the Department of Agriculture for the year 1960.

I.—INTRODUCTION

The British Crown Colony of Seychelles is 157 square miles in area and consists of 90 islands and islets, 32 of which are granitic and mountainous and lie in 3 neighbouring groups between latitude 4 and 5° South and longitude 55 and 56° East. The 60 other islands are flat and madreporic, being either sand-cays or elevated reefs, and, with 2 exceptions, lie in 4 main groups across some 600 miles of sea, in a rough south-westerly direction. Mahé, which is the main island and also the largest granitic island of the Colony, is 17 miles long and up to 7 miles wide and has an area of 55 square miles. The total area of the granitic islands is 87 square miles and that of the madreporic islands 70 square miles. As appears from the 1960 Agricultural Census, the Colony's land may be classified as follows :

Arable land	2,482 acres
Land for growing tree-crops or shrubs	30,280 „
Permanent pasture	nil „
Wood or forest land	11,105 „
All other land	18,993 „
Total	62,860 acres

Other land consists of boulders, elevated reefs and other surfaces unsuitable for agriculture. The Colony's land distribution, as appears from the 1960 Agricultural Census, is as follows :

NUMBER AND AREA OF AGRICULTURAL HOLDINGS BY SIZE OF HOLDINGS

Size Classification	Holdings		Area	
	Number	Percentage and Distribution	Acres	Percentage and Distribution
2.5 acres & under 5	272	26.64%	913	1.44%
5 acres & under 10	283	27.71%	1,718	2.72%
10 acres & under 20	161	15.76%	2,163	3.42%
20 acres & under 50	131	12.86%	4,149	6.57%
50 acres & under 100	61	5.96%	4,032	6.39%
100 acres & under 250	57	5.58%	8,976	14.25%
250 acres & under 500	31	3.06%	10,110	16.02%
500 acres & under 1,000	17	1.66%	12,442	19.76%
1,000 acres & under 2,500	6	0.58%	9,570	15.17%
2,500 acres & under 5,000	2	0.19%	9,000	14.28%
Totals	1,021	100%	68,078	100%

Holdings under 2.5 acres, which number 122 and cover 247 acres, are not considered as agricultural holdings.

2. The climate of the Seychelles is tropical. The temperature varies little throughout the year, the daily range being 5 to 7° F. March is the hottest month and August the coolest. The islands lie at the northern limit of the South-East Trade Winds, which blow for about 6 months, from the end of April to the beginning of October. During the rest of the year the weather is influenced by the North-East monsoon of the India seas, which swings from the North-East to the North-West South of the Equator. The distribution and the quantity of the rainfall varies greatly from year to year and from island to island, averaging some 90 inches on the highest granitic island and some 15 inches on the most distant atoll. December and January are usually the wettest and August the driest month. The relative humidity is high, usually between 70 and 80.

3. The economy of the Colony is almost entirely based on agriculture. There are 3 main agricultural industries: coconut, cinnamon and vanilla. As revealed by the 1960 Agricultural Census, some 23,000 acres are planted under coconut, some 14,000 acres under cinnamon and some 700 acres under vanilla. The revenue produced by the cinnamon industry is roughly one-third of that of the coconut industry. The revenue derived from the vanilla industry varies greatly from year to year, depending on variable production and prices; in 1960, it was roughly 11% of that of the copra industry.

4. Some 15,000 acres of Crown Land, about half of which is leased, come under the supervision and administration of the Department of Agriculture. The most distant Crown Land, the Aldabra atoll, is situated 612 miles from Mahé. All the distant Crown Lands are leased.

5. As stated in previous annual reports, the policy of the Department of Agriculture may be summed up as the practice and encouragement of optimum long-term use of the land and its products and other natural resources in the best interests of the population. To obtain this objective and to discharge its functions the Department is organized into 9 divisions, including that of Forestry, employing 60 officers. To advise the Government and the Director of Agriculture on all agricultural matters, there is an Agricultural Board, whose members are appointed by His Excellency the Governor and whose Chairman is the Director of Agriculture.

II.—GENERAL REVIEW

6. The rainfall was generally markedly deficient and irregularly distributed in 1960.

7. The coconut crop was comparable to the low one of 1959. Copra prices were however much lower than those which prevailed in 1959. The re-treatment of all the coconut palms of Praslin island infested with the *Melittomma* coconut trunk borer was completed. The Mahé *Melittomma* Control Scheme, which aims at controlling *Melittomma*

on Mahé and the neighbouring islands was started and made very satisfactory progress. The Agronomist continued his work to assess the fertilizer requirements of the coconut soils. The fertilizer campaign was also continued to supply coconut palms. A coconut nursery was started to supply selected seedlings to coconut planters as from 1961.

8. While cinnamon bark continued to sell well in 1960, cinnamon leaf oil dropped in value, with as a result a decreased export. A welcome development is an increase in the export of cinnamon quills and quillings. The Department of Agriculture continued its efforts to develop and improve the latter infant industry.

9. A large vanilla crop was collected in 1960. Unfortunately the high prices which prevailed in 1959 dropped by more than 50% in 1960. The total value of the 1960 export however exceeded that of 1959. Due to unfavourable climatic conditions at flowering time in 1960, a small vanilla crop may be expected in 1961. No cases of anthracnose were reported in 1960.

10. The Department of Agriculture continued to encourage the production of coffee in the Colony, to supply local demands. Numerous selected seedlings were distributed to interested planters in 1960. It is planned to distribute many more seedlings in 1961.

11. The report of the Senior Veterinary Adviser who visited the Seychelles in 1959 was published in 1960. Some of the recommendations contained in that report, such as the creation of a herd of creole cattle, were implemented in 1960.

12. The Land Settlement Scheme, which aims at creating a contented population of small-farmers, to produce foodcrops for local consumption and export crops, progressed satisfactorily in 1960. There were 100 such farmers by the end of the year.

13. Both the Mahé Re-afforestation scheme and the newly-launched Praslin Upland Conservation scheme progressed well in 1960.

14. The main achievements of the Department of Agriculture in 1960 were the running of several important Colonial Development and Welfare Schemes. As detailed below there were 10 such schemes in operation in 1960:

The Re-afforestation Scheme, started in 1950

The Land Settlement Scheme, started in 1957

The Agronomy Scheme, started in 1959

The Pest Control Scheme, started in 1959

The Fertilizer Scheme, started in 1959

The Animal Husbandry Scheme, started in 1959

The Clearing of Bracken Fern Scheme, started in 1959

The Praslin Upland Conservation Scheme, started in 1960

The Coconut Nursery Scheme, started in 1960

The Melitomma Control Scheme, started in 1960.

15. An Agricultural Census, within the framework of the World Agricultural Census, was carried out in 1960. The previous Agricultural Census had been carried out in 1950.

III.—WEATHER

16. Total rainfall was markedly deficient in 1960, 73.98 inches having been recorded at Victoria, compared to an average of 90.61 inches for the last 60 years. As 79.19 inches of rain were recorded at Victoria in 1959, rainfall has thus been markedly deficient for two successive years. Rainfall has also been very irregular in 1960, having been above average in February and below average in most of the months, especially in May, September and November. Over 56% of the total precipitation occurred in the months of January, February and December.

17. Rainfall data at Victoria and other recording stations and air temperature data for Victoria, which have been kindly supplied by the local office of the East African Meteorological Department, are contained in Appendix A.

IV.—THE COCONUT INDUSTRY

18. The total quantity of copra exported from the Colony during 1960 was 4,689 tons, valued at Rs. 4,768,419. Taking into consideration the stocks in store at the Custom Sheds at the end of 1959 and 1960, the production for export in 1960 has been 4,921 tons, valued at Rs. 4,854,264. This low production figure is comparable to that of 1959, when production for export was only 4,570 tons. As reported in the 1959 Annual Report, the large decrease in production which was registered in that year, and which has persisted in 1960, cannot be attributed only to increased local consumption and to unfavourable climatic conditions, but also to other factors such as losses due to the coconut trunk borer *Melittomma*, senility of plantations and the gradual impoverishment of the coconut soils.

19. The high prices realised by copra in 1959, which offset the drop in production, were not obtained in 1960. Prices realised in 1960 were from £62.5.0d to £82.10.0d per ton f.o.b. The average price was £76.9.0d. per ton compared to £89.0.4d per ton in 1959. The local selling prices ranged from Rs. 695 to Rs. 1,020 per ton, compared to Rs. 924 to Rs. 1,044 per ton in 1959. As previously, all the copra was sold by the Seychelles Copra Association and was exported to India, where the Seychelles F. M. S.* grade copra appears to obtain a premium. The Association's Cess remained at 2% and the export duty at 9%. Copra production for export and actual copra exports for the last five years, as well as their values, are given in Table I of Appendix B.

20. Supplies of coconut oil and poonac (coconut cake) and soap were adequate, although there is a large prospective and unsatisfied local market requirement for coconut cake, the production of the latter being limited by the local market requirements in coconut oil.

21. The re-treatment of all coconut palms of Praslin island found infested with *Melittomma*, which had previously been treated by the

*Fair Merchantable Sundried

Brown's method, using paradichlorobenzene as a fumigant, was completed in March, 1960, using the Nye's method, which involves the gouging of the infested necrotic tissues and tarring the exposed surfaces. A similar campaign was started on Mahé and the neighbouring granitic islands in April, 1960. A very satisfactory progress has been made. Details about this campaign and that of Praslin are contained in Section XII.

22. To encourage coconut planters to manure their coconut palms and to start reverting the decline in the coconut crop, 305 tons of fertilizers were imported by the Government and distributed by the Seychelles Copra Association in 1960. These fertilizers were sold at the subsidized rates of 40% to small coconut planters, producing less than 100,000 coconuts per annum, and 30% to large coconut planters, producing 100,000 or more coconuts per annum. Two types of fertilizer mixtures were sold: 15N : 15K, for the calcareous sandy flats and outlying madreporic islands, and 10N : 20P : 10K for the lateritic hill-side soils of the granitic islands, which are apparently deficient in phosphorus. This fertilizer campaign has been very successful, all the imported fertilizers having been quickly acquired and applied by coconut planters. Following indications of future marked responses to the fertilizers applied in 1959, there is a growing interest amongst coconut planters for fertilizers. Plans have therefore been made to import more fertilizers in 1961, to extend the campaign.

23. With a grant from the Colonial Development and Welfare Fund, a coconut nursery has been started on the Grand'Anse Research Station, to supply selected coconut seedlings to coconut planters as from 1961. This Coconut Nursery Scheme, details of which are contained in Section XI, was one of the recommendations contained in the Cooke's Report on the Coconut Industry. A similar nursery will also be started on Praslin or La Digue island. As it is probably the first time in the history of the Colony that coconut selection is carried out for producing material for planting on an island-wide scale, these nurseries should be no small factors in the eventual renovation of the main coconut industry.

24. The Agronomist, on the Grand'Anse Research Station and on private properties, has started numerous fertilizer trials, the final results of which will not be available for some years. Details about these trials and about the other investigations carried out by the Agronomist are contained in Section XI.

25. On certain granitic and madreporic islands, minor pests such as the Coconut Rhinoceros beetle *Oryctes Monoceros* Ol. and mealy bugs, especially the former, continued to cause concern. The *Scolia* wasp *Scolia ruficornis* F., which was introduced originally from Zanzibar, is now established on three islands: North Island, Silhouette and Praslin. In the course of 1960 it has been introduced to La Digue and Poivre islands. It is not known yet whether it is established on these islands. Carabid predators of the rhinoceros beetle, which prey on young *Oryctes* larvae, were obtained from Eastern Nigeria at the end of 1960 and liberated on Praslin and La Digue. Infestations of longtailed mealy bug, *Pseudococcus adonidum* (L.), were reported on Poivre and Darros islands. Steps have been taken to import *Cryptolaemus* lady-birds, early in 1961, for a trial in the biological control of this mealy-bug.

V.—THE CINNAMON INDUSTRY

26. Of the cinnamon products which are exported, cinnamon leaf oil and cinnamon bark, the former, which is used mainly for the manufacture of synthetic vanillin, continued to suffer from the competition of lignin-vanillin, a cheap by-product of the woodpulp industry. Cinnamon bark, on the other hand, on account of shortage of supplies of cassia bark from the East, especially from China and Indo-China, continued to obtain very remunerative prices.

27. The quantity of cinnamon leaf oil exported in 1960 was 60 $\frac{3}{4}$ tons, valued at Rs. 610,085. These figures compare unfavourably to those of 1959, when 91 tons, valued at Rs. 876,239, were exported. The decline in export was to a large extent due to low prices and reduced demands but also, to a lesser extent, to limited production in July, August and September, when several cinnamon leaf oil distilleries had to close down temporarily because of shortage of water. It would appear, from information received at the end of 1960 from the United Kingdom, that Seychelles cinnamon leaf oil is being put to new uses. If these new uses were to develop, the Seychelles cinnamon leaf oil industry would have a new lease of life. Table II of Appendix B gives the quantities and values of cinnamon leaf oil exports during the last five years.

28. The quantity of rough cinnamon bark exported in 1960 was 98 $\frac{1}{2}$ tons, valued at Rs. 821,843. These figures compare very favourably to those of 1959, when 1,048 tons, valued at Rs. 799,615, were exported, as while there was a small drop in the quantity of cinnamon bark exported in 1960, the value of that export is a record one. Table III of Appendix B gives the quantities and values of cinnamon bark exports during the last five years.

29. The quantity of cinnamon quills and quillings exported in 1960 was 9 tons, valued at Rs. 25,760. As appears from Table IV of Appendix B, there has been a recovery in that infant industry, as the first exports, which took place in 1957, totalled 8 $\frac{1}{4}$ tons, while the exports in 1958 and 1959 were respectively 5 $\frac{1}{4}$ and 3 $\frac{3}{4}$ tons. Seychelles cinnamon quills and quillings have up to now been exported only to the limited United Kingdom market. Efforts are being made to introduce the Seychelles products on the large South-American market, where Ceylon exports the larger part of its annual production of 2,000 tons of cinnamon quills. Seychelles cinnamon quills are exported in cigar-lengths of 6 inches. Longer quills, 3 feet long, made by telescoping shorter quills, were tried but did not fetch better prices than the 6-inch quills. A sample of quills made in the Seychelles from bark of introduced Ceylon cinnamon seedlings was submitted to the Tropical Products Institute, in London, for examination, at the end of 1960, to find out whether the weakness in the flavour of Seychelles cinnamon quills, as compared to that of the Ceylon product, could be attributed to varietal or other factors. No report has been received yet on this sample.

VI.—THE VANILLA INDUSTRY

30. For the fifth year in succession a good vanilla crop was obtained. Unfortunately the very remunerative prices which prevailed

in 1959 did not continue in 1960. Thus while 7,575 kilogrammes of vanilla, valued at Rs. 539,481, were exported in 1960, the 4,510 kilogrammes exported in 1959 fetched Rs. 485,156. The drop in the prices of vanilla, which amounted to over 50% of the prices obtained in 1959, is attributed to increased production in other producing countries, especially in Madagascar, which is the largest producer of vanilla. Table V of Appendix B gives the quantities and values of vanilla exports during the last five years.

31. Due to unfavourable climatic conditions at flowering time in 1960, only a small crop of vanilla may be expected in 1961.

32. The Department of Agriculture continued to supply vanilla cuttings free of charge to vanilla planters during 1960. Several thousand cuttings were thus distributed.

33. No serious cases of anthracnose, whose causative agent is the saprophytic fungus *Glomerella vanillae* (Zim.) Petl., were detected in 1960.

VII.—THE PATCHOULI INDUSTRY

34. The patchouli products which are exported from the Seychelles are patchouli oil and dry patchouli leaf. Patchouli oil is used mainly in perfumery as a fixative for other finer perfumes. The Seychelles patchouli oil has to compete on the essential oil market with Singapore patchouli oil, which is produced mainly in Malaya. Limited demands and low prices are responsible for the decline of that once remunerative peasant industry. Table VI of Appendix B gives the quantities and values of patchouli oil and leaf exports during the last five years.

35. Although there was an improvement in recent months in the prices of patchouli products and although quotations for Seychelles patchouli oil have for the first time been higher than those for Singapore oil, local producers consider the prices still too low to encourage production.

VIII.—OTHER INDUSTRIES

39. The other minor industries of the Seychelles may be divided into five groups: agricultural and forestry, livestock, marine, mineral and curios.

(a) Agriculture and Forestry

37. Apart from coconut, cinnamon, vanilla and patchouli, the Seychelles also exports various other minor crops, such as cloves, nutmegs, coco-de-mer (*Lodoicea*) nuts, eucalyptus oil, etc. Other crops, produced only for local consumption, consist of coffee, tobacco, bananas, breadfruit, sugarcane and bacca (which is fermented sugar cane juice), coconut toddy and the usual range of tropical, sub-tropical and, to a smaller extent, temperate climate food-crops.

38. No timber is imported in the Seychelles, the local requirements being obtained from the forests of the islands. As in previous years, the Forestry division of the Department of Agriculture supplied the almost total requirements of the Public Works Department for its building programme. The Colony's requirements in wood-fuel, which is the main fuel used for cooking and, to a lesser extent, for operating essential oil distilleries are also produced locally.

(b) *Livestock*

39. There is little demand for livestock produce and, as a result, few animals are kept. This is attributable to the availability of fish and the very low purchasing power of the great majority of the population. The Department of Agriculture is the largest producer of milk and livestock, its Union-Vale dairy, on Mahé island, producing some 250,000 pints of milk every year, mainly for the supply of the township of Victoria, and selling its livestock to breeders and at auction sales. Further information on the livestock industry is obtained in Section IX.

(c) *Fisheries and Sundry Marine Produce*

40. As detailed in Table VII of Appendix B, the quantity of salt fish, including shark and sharkfins, exported in 1960 is the lowest for many years. As before, the exports were to Tanganyika, Ghana and Ceylon. Although there is a ready market in East Africa for salted shark, that for salted fish is limited.

41. Green turtles, which are mainly obtained from the distant Aldabra atoll, and whose meat is relished by Seychellois, were as usual on sale at Victoria. There is a small but remunerative trade in calipee and calipash, which are made from the cartilage joining the carapace of the Green Turtle to its plastron and which are exported to Hong-Kong for soup-making. The recorded export of calipee and calipash in 1960 was 3,208 kgs., valued at Rs. 51,448. Some 2,682 kgs. of dry turtle meat, valued at Rs. 48,796, were also exported in 1960.

42. As in 1959, tortoise shell, which is obtained from the Hawksbill Turtle, was not in great demand in 1960. This industry suffers from the competition with plastic materials. The quantity of tortoise shell exported in 1960 was 905 kgs., valued at Rs. 9,483.

43. Overseas demand for Turbo, oyster and other sea shells continued in 1960, 10.8 tons having been exported, valued at Rs. 18,948.

44. A small export of trepangs, which are made from beche-de-mer and which constitute a Chinese delicacy, valued at Rs. 6,400, also took place in 1960.

45. The collection and local consumption of nestlings of Wedge-tails, Shearwaters and the eggs of Sooty-tern and common Noddy continued in 1960. Appendix C gives the declared landings of eggs from the egg-islands in 1960.

(d) *Minerals*

46. Minerals exported from the Seychelles consist of bird guano and related phosphatic coral rock. Some 7,100 tons of guano, valued at Rs. 284,000 f.o.b., were exported in 1960, compared to 5,165 tons, valued at Rs. 224,600, in 1959. This guano was quarried on the leased Crown Island of St. Pierre.

e) *Curios and Zoological Specimens*

47. A small curios industry exists in the Colony, which produces articles made up of tortoise-shell, sea-shells and palm leaf for the tourist trade. Another small industry is that of sailing boats, which are made with the best of the local timbers. There is a Home Industries in Victoria, which is run by a committee of ladies and where curios are sold to tourists and visitors from passing ships.

48. The Aldabra atoll is practically the only place in the world where the giant land tortoise exists in a wild state as it is disappearing fast from the Galapagos Islands, the only other place where it may still be found wild. Only a limited number of this reptile is therefore exported every year to zoological gardens and scientific societies. In 1960, 8 giant tortoises were exported.

IX. — LIVESTOCK

49. The Department of Agriculture, which is the largest producer of milk and livestock in the Seychelles runs the Union-Vale dairy, a Veterinary Station and a Quarantine Station, near Victoria, on Mahé island, and keeps stocks on various other stations and sub-stations, including stud-bulls. As in past years, the milk produced at the Union-Vale dairy was supplied to the township of Victoria and to Government institutions, while the surplus livestock was sold to competent breeders and to butchers at regular auction sales.

50. The comprehensive and well-written report of the Senior Veterinary Adviser, Dr. D. E. Faulkner, Director of the Nyasaland Veterinary Services, who visited the Seychelles in October and November, 1959, was published in 1960 and was unanimously recommended to the Government by the Agricultural Board as a working basis for developing the animal husbandry industry of the Colony, in conjunction with proposed agricultural developments.

(a) *Animal Husbandry*

51. Cattle, pigs, goats, ducks, Guinea-fowls and a few turkeys, geese and donkeys are kept in the Colony, but the numbers are scarce. The livestock produced by the Department of Agriculture, consisting of Sindhi X Fraesian cattle, Large White and Berkshire pigs and Rhode Island Red Poultry, is well appreciated by breeders. However, there has been no large increase in livestock keeping in recent years; according to the 1960 Agricultural Census, there has ever been a marked decrease in the adult cattle population of the Colony, attributable to the repealing, in 1954, of the control by Government of the slaughter of cattle. It is proposed, in the course of future development works, to arouse the interests of planters in livestock in general, especially from the point of view of the C & C (Coconut and Cattle) concept, as cattle rearing in coconut plantations, apart from producing subsidiary products like meat and milk, would be extremely beneficial for manuring the coconut palms.

52. Up to 1959, the cattle breeding policy of the Department of Agriculture was to cross Fraesian and Sindhi cattle to produce crossbred

animals, with good milch characters, suited to the tropical conditions prevailing in the Colony. While the production of crossbred animals is continuing at the Union-Vale dairy, for milk production and for distribution to breeders, following a recommendation contained in Dr. D. E. Faulkner's report, a small herd of creole cattle, consisting of local creoles and imported creoles from Mauritius, has been started at the Grand'Anse Research Station, with the object of eventually replacing the imported breeds and their crosses by the acclimatized creoles.

53. Another of the recommendations of the Senior Veterinary Adviser which was implemented in 1960, was sending a young officer of the Department of Agriculture for training in animal husbandry in Nyasaland. The officer in question was selected early in 1960 and was stationed at the Mikolongwe Training Centre of the Department of Veterinary Services and Animal Husbandry of the Nyasaland Government. He returned early in 1961, after undergoing the one year course of the Mikolongwe Training Centre and after obtaining the certificate in Animal Husbandry of the Nyasaland Department of Veterinary Services and Animal Husbandry. This officer will be stationed on the Grand'Anse Research Station, where he will take charge on the Animal Husbandry section.

54. In 1960, the previous system of disposal of all surplus livestock by auction sales, which often resulted in good animals going to the butcher, was discontinued and the old system of selling the best of animals to competent breeders was resumed; old and poor animals continued to be sold by auction. Some 50 sindhi-Fraesian crosses, 35 large white and 16 Berkshire piglets were thus sold to breeders in 1960.

55. Amongst the livestock which found favour with breeders in 1960 was the progeny of Berkshire pigs originally imported from Mauritius.

56. An interesting result with mineral supplements obtained by the owner of the out-lying coral island of Farquhar, is worthy of record. By supplementing his livestock feed with Churn Protective Mineral No. 105, which the Department of Agriculture has been recommending to cattle breeders for many years, he has been able to maintain a herd of 25 head of thriving cattle on his island. Prior to using the above-mentioned mineral mixture all attempts to rear cattle on Farquhar island had been failures, as have also been all attempts to rear cattle on the other coral islands of the Colony. These failures are attributable to deficiency in iron and manganese of the coral island soils, which consist of some 90% calcium carbonate.

57. The Union-Vale dairy functioned satisfactorily in 1960, supplying pure, clean milk to the population of Victoria and to Government institutions. The herd, which consists of Fraesians and Sindhi-Fraesian crosses, was generally very healthy. An average of 61 cows were in milk at Union-Vale, in 1960, and yielded an average of 4,208 pints per animal. Out of the 256,733 pints of milk produced at Union-Vale in 1960, 221,053 pints were supplied to Government institutions and to some 260 customers, and 35,680 pints were fed to young stock. All the milk was strained, cooled and bottled before delivery. The milkers and the other dairy personnel were medically examined every month,

Two silage pits were filled with maize and elephant grasses. As usual the product was palatable and was of great help during the dry South-East Monsoon.

58. A total of 10 stud bulls, consisting of Fraesian, Sindhi and imported Creole, were stationed on 4 stations and sub-stations in 1960.

59. As in previous years, diluted solutions of toxaphene, for the control of Buffalo fly, mineral supplements, dairy disinfectants and other sundries were sold at the Veterinary Station of Union-Vale.

60. A small Poultry Farmers' Co-operative Society, which imports balanced poultry feed, was formed in 1960.

(b) *Veterinary Work*

61. No epidemics occurred during 1960.

62. The clinic, at Union-Vale, was operated as usual, charging nominal fees or giving free treatment where owners were certified as being unable to pay. In addition to minor dressings, the following treatments or operations were carried out in 1960 :

Clinical examinations	192
Burdizzo castrations	10
Open method castrations	20
Caponisations	4
Ovariectomy (cats & dogs)	6
Other minor operations	20
Faecal examinations	16
Smears	5

(c) *Quarantine Station*

63. The quarantine stations at Union-Vale and on Long Island continued to be operated. The animals quarantined consisted of 5 dogs, 4 pigeons, 1 parrot, 2 bulls and 4 cows.

64. Health certificates were issued in respect of 19 tortoises, 1 dog and 1 parrot which were intended for export.

X. — INVESTIGATIONS AND TRIALS

(a) *Research Station*

65. Although the institution of the Research Station, which is to be situated at Grand'Anse, on the West Coast of Mahe, has been deferred until 1961, investigations and trials have started on the Grand'Anse farm under the Agronomist, whose office, laboratory and glass-house are situated there. Apart from investigational and trial works, the Agronomist was also responsible, at Grand'Anse, for the coconut nursery, the livestock and the general management of the farm.

(i) *Coconut*

66. Investigations on coconut at Grand'Anse in 1960 have consisted in detailed recording of flower incidence and nut formation on

bunches of six representative coconut palms; in studying the possibility of growing cinnamon and coconuts together on an indifferent hill-side, where coconut yields cannot be high and where a secondary crop would be desirable and in fertilizer trials on adult and young palms.

67. The flower incidence and nut formation recording has revealed that the number of maturing nuts per bunch on a palm is more or less constant throughout the year, although there is a slight peak in the early months, which probably accounts for the increased production in the south-East Monsoon; that nut counts per bunch on two palms growing on the same site are similar and that any marked differences in yield between them are due entirely to bunch production and that the constant number of nuts per bunch is quite unrelated to the number of fertilized flowers, and that therefore it is almost certain that immature nut fall in the Seychelles is due to physiological factors.

68. The growing of coconut and cinnamon as hedges along the contour, in between palms, was tried on Block A of Cimetiere. Due to a dry spell after planting the cinnamon, only 10% of cinnamon seedlings survived. The gaps will be filled in 1961. In January and February the 368 palms of Block A were manured with 6:26:6 fertilizers, using the method recommended by the Department of Agriculture. A nut count carried out at the end of December revealed no measurable effect.

69. Block B of Cimetiere, which consists of 220 palms, was cleaned and manured with 6: 26: 6 in February, 1960. Nut counts in the first year of treatment has revealed an increase of 5 nuts per palm.

70. On Plateau Longue, which had been underplanted with seedlings in 1952, all the old palms were felled in 1960 and the young palms, 192 in number, used for a fertilizer experiment. The experiment is a 2^3 factorial for N. P. K. treatments in two applications, with 12 palms per plot, the fertilizer being broadcast. Each plot is split into 4 sub-plots, of 3 palms each, which test the factorial effects of stem injections from iron and manganese. The experiment was started in August and growth records are kept. There is, as expected, no sign of difference due to treatment yet, but all the palms are looking healthier and the leaves are much greener.

71. Nut counts were made on every Grand'Anse coconut palm during anti-Melittomma treatment, from 1956 to 1959, and an annual count will be carried out in future. The following figures are of interest:

<i>Year</i>	<i>No. of Palms</i>	<i>Total Nuts</i>	<i>Mean Count/Palm</i>
1956	4,034	127,560	31.6
1959	4,034	160,970	39.9

In 1959 701 palms carried less than 10 nuts, i.e. 17.4% of the palms only produced 2.2% of the crop. Also 1249 palms carried less than 20 nuts, i.e. 31% of the palms carried only 7.3% of the crop. Assuming that this situation is similar to that on commercial plantations, felling the lower yielding palms to provide spaces for replanting would result in a negligible loss in production, especially as the surrounding palms would probably benefit from the extra space.

72. Systematic fertilising of palms near houses and along the roadside has been carried out. These palms are unsuitable for experimental work and can only be used for revenue producing purposes. The fertilizer used is the standard 10: 20: 10 available through the Sevechelles Copra Association. Full records of nut counts on these palms have been made.

(ii) *Laboratory*

73. Although the office and laboratory were occupied in May, they were not complete and functional until August. Several weeks were then needed for the unpacking and sorting of equipment, apparatus and chemicals.

74. A number of photometric analyses of coconut water were carried out to discover the concentration of sodium and potassium, in order to compare the level in local nuts with figures obtained elsewhere. The range of figures show that, assuming there is little genetic difference, the palms are deficient to highly deficient in potassium. Most analyses showed a potassium content of about 1,000 p.p.m. in the nut water. After manuring with the recommended dressing of 6: 26: 6 fertilizer the potassium contents of nut water had increased to over 2,000 p.p.m., within 2 months, in old hill-side palms. There is hope that this simple analytical technique will be sufficient to diagnose potassium deficiency in individual palms.

75. A number of nitrogen determinations on Grand'Anse soils were carried out, to familiarise the staff with the semi-micro technique. Surprisingly the sandy calcareous "plateau" soils had a higher nitrogen content than the red earths, even at depths, the means being 0.62% nitrogen for "plateau" and 0.38% nitrogen for the red earth. As expected, the nitrogen content tended to decrease with depth.

76. As a result of the soil survey of the outlying islands, the analytical work has increased considerably. It is hoped that the analysis of the 200 odd samples which have been collected in the course of this survey will be completed early in the New Year. The determinations to be carried out are: moisture, pH., organic matter, total phosphates, total nitrogen, total carbonates. It would be most valuable to determine "available" phosphates, but this is difficult, and the results are unreliable, on these highly calcareous soils.

77. A member of the laboratory staff accompanied the Agronomist and Geologist to the out-lying islands to carry out phosphate determinations on guanoiferous material. About 200 colorimetric analyses were made under very difficult conditions, with a fair degree of accuracy, and were most valuable addition to the visual observations.

(iii) *Glasshouse*

78. The construction of the Dexion, 30' x 30', glasshouse occupied the laboratory staff for two months, but the final masonry work was not completed until late October. In the meanwhile preparations were made for making and storing the nutrient solutions. The methods used in this are based on those used at Long Ashton Research Station. Concentrated solutions of individual salts are stored in 500 ml. polythene aspirators. The water is from a Permutit Deioniser and has a conductivity of less

than 4 reciprocal megahomes per centimeter cube. All apparatus has been washed in 0.5% Teepol, twice in 10% HCl and finally in demineralised water until all trace of acidity is lost in the washings. The apparatus and solutions are stored in a separate room adjacent to the glasshouse.

79. Pot experiments are being based initially on the well known 'minus-one' technique. In this, indicator plants are grown in soil about which information is needed. The pots are watered with nutrient solutions containing all but one of the known necessary nutrients. The control is watered with a complete nutrient solutions and it is assumed that if a plant in one of the other pots grows as well as the control, the element missing in its nutrient solution is adequately supplied by the soil. The pots used are 10" clay pots which have been painted inside with two coats of 'Bituros' bitumin paint, whilst in the early experiments the indicator plants are tomatoes.

80. Contrary to expectation, tomato growth has been very poor in 'plateau' soil and few useful indications have been found. Even the control plants have died at an early age. It is difficult to understand this, as growth in red-earth has been excellent. In reasonably fertile red earth from Block A — Cimitiere early indications were that only phosphate was deficient. By the end of the year tomatoes in all pots except 'minus phosphate' were flowering in the third bunch, but in those pots the plant had remained static at the four leaf stage. However, at that time it became obvious that symptoms of nitrogen deficiency were appearing in the—N pots and that growth in the—B pots was falling off. Further trials have since been started and it is hoped that the glasshouse will be working to capacity by the end of January, 1961.

81. Records are being kept of all plants at weekly intervals, whilst every three weeks all plants are photographed to provide a permanent visual record.

(iv) *Coconut Nursery*

82. The site for the Grand'Anse coconut nursery was prepared, in April and May, on a 2½ acre of uniform calcareous sand. Planting started on the 1st of January. The nuts were obtained from a simple block at Anse aux Pins, on Mahé. Two nut selections were carried out: one at Anse Aux Pins, on collection of the nuts, and the other in the nursery, before planting. Germination and growth have been good and seedling selection was commenced at the end of the year. The following table gives details of the nursery:

Nuts purchased	41,795
Nuts rejected	10,911
Nuts planted	30,884
Nuts and seedlings in Nursery on 31st December	29,067

(v) *Livestock*

83. There has been a major change in livestock policy during the year. Grand'Anse had been acting as a grazing area for 'dry' stock from Union Vale dairy, whilst a breeding herd of Sindhis are kept. With the arrival of Creole cattle from both Seychelles and Mauritius, Grand'Anse became a breeding station with the object of: maintaining the Sindhi herd as its present number, but improving the strain by breeding and

culling; increasing the existing creole herd and definitely aiming at a higher milk production by using the imported Creole Bull as sire.

84. The cross cows, bulls and calves, have been slowly transferred to Union Vale throughout the year and, by the end of the year only 4 cross calves remained.

85. Feeding has not been a major problem in 1960. An adequate quantity of grass has been available throughout and it has been unnecessary to use the silage which was made in May. The plane of nutrition was low and over the last few months a balanced diet, with extra allowances for milk production and calving, has been fed. This has added to the expense but all beasts are now in excellent condition. Regular dipping has been carried out and disease has been no problem. One of the Mauritian Creoles developed cowpox shortly after arrival but was rapidly cured. Unfortunately one Mauritian Creole cow died in December from a ruptured spleen. The reason for this was unknown.

86. The Creoles have been doing well and the bull is an eager and successful sire. Their milk yield is high and one, during December, was averaging 18 pints a day. The Sindhis have thrived, but they are a mixed bunch, yields are variable and extensive culling is needed if the strain is to be improved.

(vi) *Miscellaneous*

87. The incidence of Rhinoceros Beetle damage has decreased considerably during the year whilst the number of rats on the plantation has also decreased. The Melittomma control measures carried out in 1959 have been effective and the rate of reinfestation is low. However, a number of the palms which were very deeply gouged have fallen in the heavy storms encountered during 1960. Physiological diseases are of little importance but the effects of abnormal soil conditions on palms are mentioned below.

88. No exploitation of cinnamon leaf has been carried out in 1960. During the clearing of the Colline area a small quantity of bark was produced. Quill-making has continued on a reduced scale. On the average, 100 lbs. of green quills produced 32.4 lbs. of dry quills and 14.2 lbs. of quillings. The Ceylon cinnamon seedlings received from Kew, in 1959, made a slow start and one died early in the year. They were planted in "plateau" soil instead of the usual red earth; to discover whether this was the reason for the poor growth two seedlings were transplanted to an adjacent terrace. However, by the middle of the year, all the seedlings were flourishing and have continued to do so. None have yet flowered and attempts at propagation by layering have had little success. The leaves of the Ceylon cinnamon seedlings are noticeably more pungent than those of the local strain of cinnamon and a sample of quills produced at the end of the year, which has been sent to Tropical Products Institute for evaluation, had a much better aroma and flavour.

89. The small plot of hillside robusta coffee thrived throughout the year and a total of 202 Kgs. of green coffee was collected. Unfortunately the beans were on the small side, but otherwise the quality was good.

The terraces still have an infestation of 'Herbe Onion'* although the bushes were heavily mulched with spent cinnamon leaf and bagasse. An additional 181 seedlings were planted to fill this bank of terraces in July. Although the weather was very dry it was possible to arrange for all of them to be irrigated from a dam higher up the valley and the take was 100%. A total of 22,000 selected seeds were planted in nursery beds, at a 6" x 6" spacing, on plateau soil, in early April. Germination was about a month later and about 90% of the seeds were good. Initial growth was excellent and sprinkler irrigation was carried out daily during the dry weather. During September chlorosis of the younger leaves became noticeable and was severe by November. Many seedlings were lost. A light dressing of farmyard manure was given in early November and since then the majority of the surviving seedlings have recovered and are growing well.

90. Several small plots of sugar cane are maintained on the lower lying parts of the station for planting material. The crop is utilised by the Bacca Club for bacca production, and a total of 46.665 tons was disposed of to this organisation. A considerable amount of labour and manure are needed to keep the crop yield at a reasonable level.

91. The cultivated fodder is 'Elephant Grass' — *Pennisetum* app., which is grown on both drained marsh and on dry terraces. Only a small additional area of terraces at Nageon was planted in 1960, and this is not yet fit for cutting. The grass is manured annually with farmyard manure and is thoroughly cultivated to remove weeds and dead growth. Cutting is just prior to flowering where possible, but this cannot be adhered to at times of peak production, when silage is prepared. Yields for 1960 were as follows (in Kgs. or fresh grass):

	Plateau Cotton	A	B	C	Terraces			Else- where	Total
					D	E	F		
	106,911	18,732	20,283	9,059	6,778	12,776	3,824	35,181	208,739
Area (acres)	4.007	0.521	0.840	0.639	0.465	0.487	0.587		
Tons (acre)	26.7	36.00	24.15	14.18	14.58	26.23	6.51		

It is interesting, and somewhat surprising, that the yield per acre on the best set of terraces is higher than on the very fertile Plateau Cotton plots. The monthly totals only give a very rough indication of production throughout the year, as other factors have influenced the cutting intensity. For example, no cut was made in April so that there could be plenty of grass available for silage making in early May, and in that month nearly 46 tons of grass were ensiled. It had not been necessary to use this silage by the end of the year. When 'elephant grass' production was low wild fodder was collected from the areas of the station inaccessible for grazing. This is expensive owing to the distances involved in head carriage, and it will probably be more economic in future to make greater use of the silage.

92. Two samples of groundnut seed were obtained from Tanganyika in September and trials plots were set out on the plateau near the copra dryer and on the nearby terraces in October. On the terraces plots with

**Cyperus rotundus*

2 cwts/acre superphosphate and with farmyard manure are being compared, whilst on the plateau only superphosphate was given. Growth on the terraces is adequate but germination was poor for some reasons and the yield is unlikely to be high. It is probable that heaving liming would be beneficial in future in view of the high calcium demand of this crop. On calcareous plateau soil growth has been excellent and both varieties, Ntitwunde and Natal Common, are bearing heavily — the latter being the best. Harvesting should take place early in 1961 and it is hoped that a very good crop will be obtained if the depredations of rats, which were noticed at the end of 1960, have been stopped.

93. Some simple variety trials on vegetable crops were carried out on plateau soil to determine the suitability of certain imported varieties. The following results were obtained.

	<i>Variety</i>	<i>Mean weight of crop per plant</i>
Lettuce	Webbs Wonderful	1.0 lb.
	Golden City	failed
	Golden Ball	1.1 lb.
	Premier	2.0 lb.
Tomato	Golden Queen	2.0 lbs.
	Amateur	2.8 lbs.
	Early Market	1.8 lbs.
Cabbage	Chinese (Pitsi)	1.8 lbs.
	Tender and True	2.1 lbs.
	Earliest	2.2 lbs.
	Harbinger	2.0 lbs.

All crops suffered badly from Giant Snails in the early stages of growth and much replanting was necessary. Lettuce variety 'Premier' was excellent but tended to bolt very rapidly if not harvested early. Tomato yields were poor owing to 'wilt'. 'Amateur' was outstanding and bore for a long period with yellow fruits about an inch in diameter. Unfortunately its flavour was somewhat insipid. The cabbage, especially the 'Chinese', suffered from caterpillars when near harvest, which reduced the weight and necessitated an early harvest. The cabbages were of uniform excellence and were a small market size.

94. To reduce expenditure on livestock feed a number of previously unsed terraces were planted up with maize at the end of the year and this will continue in 1961. The maize was that imported by Government for feed and the variety is unknown.

(b) Other Investigations and Trials

(i) Soil Surveys

95. The Agronomist has completed a soil survey of the out-lying islands. A report on this survey will be available in 1961.

96. Preliminary investigations of hill-side and "plateau" soils have been carried out by the Agronomist, prior to a detailed soil survey of the granitic islands. This survey will be effected in 1961.

(ii) *Relationship between rainfall and coconut yields*

97. A statistical study of the relationship between rainfall and coconut yields has been somewhat disappointing and has been abandoned. The effect of the large seasonal difference in rain is marked, but small variations in rainfall have varying effects which are difficult to correlate with yield data. Probably the gross rainfall is less important than intensity of fall, but this cannot be obtained for monthly figures.

98. In order to obtain more information about the effect of climate on palm yields, a meteorological station is being set up at Grand' Anse near the laboratory. Measurements to be taken are:

- (i) Temperature
- (ii) Humidity
- (iii) Earth temperatures
- (iv) Wind Velocity and
- (v) Rainfall (by a recording rain gauge so that intensities are determinable).

It is also hoped to site one or two rain gauges at different places to find out the local variations in fall.

(iii) *Fertilizer Trials*

99. It is impossible to carry out fertiliser experiments at Grand' Anse, which are valid for the whole of Seychelles and so a number of experimental plots have been set out on private estates as follows:

Area	Number of Experimental Blocks	Total Number of Palms
Outlying Islands	122	674
La Digue	10	180
Mahe	30	540
Total	162	1,394

100. No true yield records are kept from any of these trials, only counts of nuts on the palms. No nuts smaller than fist size are counted, as many of these are liable to be shed. No result can really be expected for a least two years and as the trials have only been in progress for a year or less no results are reported.

(iv) *Biological Control Work*

101. The introduction of insect and other predators of agricultural pests continued in 1960. An account of these introductions is contained, in Section XII.

(v) *Livestock*

102. As reported in Section IX, an interesting result was obtained by the owner of a coral island, by supplementing his cattle feed with mineral mixtures. As a result he has been able to maintain on that island a herd of 25 head of cattle. It is the first time that successful rearing of cattle has been obtained on a coral island of the Seychelles, whose soils consist of some 90% calcium carbonate and are believed to be deficient in iron and manganese.

(vi) *Mosaic-Resistant Cassava*

103. As mosaic of cassava, although not yet serious, occurs widely in the Seychelles and reduces yields, cuttings of the following six mosaic-resistant clones of cassava were imported from Kenya, from the East African Agriculture and Forestry Research Organization, in 1960.

4763/16

Msitu

5315/39

46106/27

4697/4

53121/22

Aipin Valenga

104. These cuttings have been planted in the Botanic Gardens, under observation, and will be released for general cultivation if found resistant to mosaic under local conditions.

(vii) *Forestry Trials*

105. As reported in Section XVI, the Forester has also carried out, in 1960, trials with hardy and prostrate species to obtain a soil cover on the denuded slopes on the eroded Praslin and Curieuse islands.

XI.—EXTENSION WORK AND SUNDRY SERVICES

106. As reported in the 1959 Annual Report, no proper Extension Services exist yet in the Department of Agriculture. An Extension Service Scheme has been drafted however and, if approved, will be extremely useful for building up effective extension services as from 1961.

107. During 1960 the Director of Agriculture, the Agricultural Officer, the Agronomist, the Inspector of plantations, the Laboratory-Assistant, the Stock Inspector and the Forester, in the course of visits to planters, discussed such topics as coconut manuring, coffee and vanilla husbandry, animal husbandry and re-afforestation. The Agronomist was able to make an extensive tour of the out-lying coral islands and to offer advice on the problems concerning coconut on these islands. The Agricultural Officer, although very busy during the major part of the year with the administration of the Department, during the absence on leave of the Director, and with the Pest Control Scheme, whose responsibility he assumed on the departure of the Entomologist, was able to visit numerous planters, especially coffee growers, to advise them on their problems. The Laboratory-Assistant, apart from visits to vanilla planters, went on a tour of the Chagos islands, which are dependencies of Mauritius, to inspect the copra produced on these islands.

108. The Director of Agriculture, the Agricultural Officer and the Inspector of Plantations were frequently engaged, as in the past years, in valuation of land for the Registry of Deeds and for the Agricultural Bank. The Forester and the Inspector of Plantations had also to carry out numerous valuations of timber trees, which had to be felled on private land for the erection of electric lines.

109. The Land Settlement Scheme Demonstration plot was maintained at Anse Boileau to demonstrate, amongst other crops, the growing of vegetables, various root-crops, bananas, pine-apple and coffee.

110. The Field Instruction course, for boys of primary school leaving age, which was started on the Land Settlement Demonstration Plot in 1959, continued on a vacant plot on the Land Settlement Scheme, at Anse Boileau, in 1960. The 6 boys who were trained in vegetable and root-crop growing on this Field Instruction Course Plot made very satisfactory progress and should become good gardeners or settlers in due course. It is proposed to extend as soon as possible this field instruction course, which is very popular.

111. As in 1959, numerous vanilla cuttings, coffee seedlings and other planting material were distributed to planters, on demand. It is intended, in 1961, to turn the small Souvenir Crown Land, which overlooks Grand'Anse, into a plant nursery to supply citrus and other grafted fruit trees, cuttings of root-crops like yam and coffee and other seedlings to settlers on the Land Settlement Scheme and to planters in general. As there is no private nursery-man in the Seychelles, this nursery will serve a useful purpose.

112. The officers of the Department of Agriculture continued in 1960 to make frequent contributions to the Government Bulletin and to the local press on agricultural, animal husbandry and forestry matters.

113. In 1960 the Department of Agriculture continued also to render sundry services to planters, the public at large and other Government departments, in providing, supply or issuing:

- (a) Veterinary treatment to sick animals and sales of veterinary drugs,
- (b) Quarantine facilities for imported animals,
- (c) Export certificates for animals,
- (d) Sales of cattle, poultry and pigs for breeding or slaughter,
- (e) Sales of milk to Victoria customers and supply of milk and other produce to Government institutions,
- (f) Sales of tested vegetable seeds at non-profit prices,
- (g) Sales at normal prices, or issues free of charge, of planting material,
- (h) Sales of imported fertilizers and pesticides at non-profit prices,
- (i) Laboratory analysis or testing of essential oils and other produce prior to export,
- (j) Inspection of copra, cinnamon bark and salt fish, at the Custom Shed, prior to export,
- (k) Inspection of plant imports and inspection and certification of plant exports,
- (l) Valuation of land and crop estimates,
- (m) Distillation of essential oils on demand,
- (n) Distribution of beneficial insects,

- (o) Fighting of forest or bush fires,
- (p) Supply of timber to the Public Works Department, the Port Department and the Technical Centre of the Education Department.

XII. — PEST CONTROL

(a) *Melittomma Borer*

114. The lymexylonid coconut trunk borer *Melittomma insulare* Fairm being the only major agricultural pest in the Seychelles, pest control work in 1960 has consisted almost essentially in combatting this insect pest. Two anti-*Melittomma* campaigns were carried out in 1960. The first one, which had been started on Praslin island in December, 1959, was completed in March, 1960. The second campaign, which was started in April, 1960, on Mahe and the neighbouring granitic islands, is expected to last 5 years.

115. From December 1959 to March 1960 all the Praslin coconut palms still found infested with *Melittomma*, after the previous treatment by the Brown's method, which involved fumigation with paradichlorobenzene, were re-treated by the Nye's method, which consists in the gouging out of the rotting, infested coconut trunk tissues and coating the exposed surfaces with a creosote coal-tar mixture. In the course of this campaign 38,686 coconut palms, out of a total of 71,539 palms on on Praslin, were treated. A maximum *Melittomma* control is now considered to be obtained on Praslin.

116. A similar campaign was started on Mahe and the granitic islands in 1960 which aims at obtaining a control of *Melittomma* within 5 years. The anti-*Melittomma* teams, each consisting of a Supervisor and of 10 labourers, operated on Mahe from April 1960. By December a total of 152,011 palms had been examined and treated if found infested. If this rate of work is maintained, it should be possible to complete the campaign within 5 years, as scheduled. Very satisfactory results have been obtained so far, as very few palms, averaging less than 1%, have been lost during or shortly after treatment.

(b) *Rhinoceros Beetle*

117. The coconut Rhinoceros Beetle *Oryctes monoceros* Ol. although of minor importance in the Seychelles, continues to be a noxious pest on two or three islands, where it is an obstacle to replanting.

118. The wasp *Scolia ruficornis* F., which parasitizes the Rhinoceros Beetle and which was originally introduced from Zanzibar and had been established on North Island, is now established on Praslin and Silhouette. It has not been recovered on La Digue Island yet, where it was introduced in 1959 and where the Rhinoceros Beetle is particularly noxious. In 1960, the wasp was also introduced on the out-lying coral island of Poivre.

119. At the end of 1960 large Carabid beetles, which prey on young Rhinoceros Beetle larvae, were obtained from Eastern Nigeria.

from an Entomologist of the South Pacific High Commission, and liberated on Praslin and Curieuse islands for another attempt in the biological control of the Rhinoceros beetle. Another consignment was expected early in 1961.

(c) *Mealy Bugs*

120. Heavy infestation of coconuts by the Long-tailed mealy-bug *Pseudococcus adonidum* (L.) on Poivre and Daros islands were reported towards the end of 1960. *Cryptolaemus* lady-birds were immediately ordered from the Californian station of the Commonwealth Institute of Biological control, for controlling this mealy-bug, and were received early in 1961.

121. A new mealy-bug record for the Seychelles was made in 1960, that of *Dysmicoccus brevipes* (Ckll.) on coconut, on Denis island.

(d) *Rat and African Barn Owl*

122. The Black Rat (*Rattus rattus*), which is a coconut pest in the Seychelles, causing the loss of numerous green nuts, is fought mainly by trapping and poisoning. The premium paid by the Seychelles Government for rat tails results also in the destruction of a large number of rats every year. In 1960, for instance, this premium resulted in the destruction of 47,930 rats.

123. The African Barn Owl *Tyto alba* (Scopoli), introduced from East Africa in 1949, 1951 and 1952 for the control of rats, is breeding and spreading. In spite of controversial reports, this owl has been proved, up to now, to feed principally on rats and, to a smaller extent, on White Tern, Tenrees (*Centetes caudatus*), mice, frogs and cockroaches.

(e) *The Seychelles Magpie Robin and Wild cats*

124. Following a recommendation from Dr. J. Hurrell Crook, a student of Animal Behaviour of the Field Station for the Study of Animal Behaviour, Department of Zoology, University of Cambridge, the Department of Agriculture undertook in 1960 a campaign against wild cats on the small Frigate island, which is the last strong-hold of the endemic magpie robin *Copsychus sechellarum* Newton, which is threatened of extinction by wild cats. In the course of this campaign some 86 cats were destroyed by trapping and poisoning. Another campaign has been planned for 1961.

XIII. — PRODUCE INSPECTION AND ROUTINE LABORATORY WORK

125. Apart from supervising the produce inspection at the Custom Sheds and the routine laboratory work, the Laboratory-Assistant also visited planters to offer advice on vanilla husbandry, accompanied Dr. J. Hurrell-Crook, of the Field Station for the Study of Animal Behaviour, of the Zoology Department of the Cambridge University, to Felicite, Cousin and Cousine islands, accompanied Dr. G. B. Pickering, of the Tropical Products Institute, on visits to essential oil distilleries, went on a tour of the Chagos islands, which are dependencies of Mauritius, for copra inspection, and supervised a wild cat campaign on the island of

Frigate, in order to try to save the endemic Seychelles Magpie Robin from extinction.

(a) Produce Inspection

126. As in previous years, the Produce Inspector, stationed at the Custom Sheds, in Victoria, was responsible for the inspection and sampling, when necessary, of copra, cinnamon bark, dry patchouli leaf and salt fish. In general the quality of produce deposited for export was of a good standard. There were the usual lots of copra and other produce which were rejected for too a high a moisture content or improper preparation.

127. Samples of essential oils deposited for export were, as usual, collected for examination in the routine laboratory.

(b) Routine Laboratory Work

128. The routine laboratory examines samples of all essential oils and patchouli leaf deposited for export. It also examines various samples for the Excise Department and other Government departments and the public.

129. The laboratory dealt with a total of 749 samples of produce for export, fermented liquors and miscellaneous items in 1960, as compared with 892, 921 and 690 samples in 1957, 1958 and 1959 respectively. A large part of the work continued to be provided by the export of cinnamon leaf oil, 337 samples have been taken for examination. One sample of cinnamon leaf oil was found adulterated with mineral oil (kerosene). The other samples consisted mainly of fermented liquors, 275 having been examined. Lime, cattle-dipping solutions and miscellaneous other samples were also examined and reported on.

130. Other works carried out in the laboratory in 1960 included distillations of oil from samples of patchouli leaf deposited for export and the testing of temperate-climate vegetable seeds imported by the Department of Agriculture prior to and during the period the seeds were on sale to the public.

XIV. — CROWN LAND SUPERVISION AND ADMINISTRATION

131. The area of Crown Land remained unchanged and, as already stated, consists of some 15,000 acres, about half of which is leased and the remainder operated from 16 stations or sub-stations, ranging in size from 1 man guardian to where a hundred men and women are employed. The leased Crown Lands consist of distant madreporic atolls and islands, of Land Settlement Scheme plots and of various house sites on Mahe island. The unleased Crown Lands consist of forest areas, which are worked and exploited by the Forestry Division; of land of public utility, such as the sites of police stations, sub-accountant offices, schools, hospitals, clinics, the leper settlement and quarantine station; of the Botanic and Government House grounds and town gardens, and of estates. Of the latter Grand'Anse has been retained for a Research Station, Union Vale is devoted to the Government Dairy, Anse Boileau, Foret Noire and Rose Belle are being allocated to settlers under the Land Settlement Scheme, while Souvenir is to be converted into a

plant nursery and Ste. Anne island, which is partly leased, is still managed as a coconut estate.

132. In 1960, L'Amitie estate, on Praslin island, was acquired by Government on exchange for Felicite island, and will be used for the proposed Praslin Land Settlement Scheme. In the meantime and until this scheme will have been implemented, L'Amitie is managed as a coconut and vanilla estate.

133. As in preceeding years, the Crown Lands and estates were cleaned and cropped on a regular basis. Fire breaks were maintained around and across the Crown forests. Special attention was given to the up-keep of the Vallee de Mai, in Praslin, the home of the famous Coco-de-mer palm *Lodoicea maldivica* Pers. and of a rare endemic bird, the Praslin Black Parrot *Coracopsis barklyi* Newton, and to the Botanic Gardens, in Victoria, where there is a large collection of endemic and exotic plants, especially of tropical palm and pandani.

134. Produce from Crown Lands consists of timber, cinnamon products, coconuts and copra, sugar cane, small quantities of fruits and food-crops and livestock and milk. The timber is supplied to the Public Works Department and other Government departments, such as the Technical Centre of the Education Department and the Port Office. The coconuts are either converted into copra, which is exported, or are sold by tender on a monthly basis. The cinnamon products, consisting of cinnamon leaf and cinnamon bark, are usually cropped by contractors. Cinnamon quills and quillings made at Grand'Anse are exported. Sugar cane is supplied to the Victoria Bacca Club for making bacca, which is a local beer made of fermented sugar cane juice. The fruits and food-crops, when available, are supplied to Government institutions. The livestock and milk are sold to the public or are supplied to the Government institutions. Details about agricultural and forestry produce from Crown Lands are contained in Appendices G and H.

XV. — LAND SETTLEMENT

135. With the appointment of the new Land Settlement Officer in February, 1960, the Land Settlement Scheme received a new impetus. In spite of "teething" difficulties, very satisfactory progress was made during the year under review.

136. At the end of 1960, there were 101 settlers under the Crown Land Settlement Scheme, at Anse Boileau, Foret Noire, Rose Belle and Les Cannelles, on Mahe. While 17 settlers left or were evicted in 1960, 36 new settlers were allocated plots of land. There are still 44 5-acre unallocated plots of Mahe, which will be allocated in the course of 1961. As some of these are not planted under enough cash crop to attract settlers, consideration will have to be given to developing them before allocation. Some 35 3-acre plots, consisting of pure coconut stands, will also be allocated at L'Abondance and Foret Noire in 1961.

137. A draft scheme has been prepared for settling people on Praslin island. The scheme, when approved, will enable the settlement

until 1961 of some 40 families on the newly-acquired Amitie estate, It should be possible, eventually, to settle some 80 to 100 families on L'Amitie.

138. As in preceeding years the crops grown by the settlers of the Mahe Land Settlement Scheme were cash crops like cocconut, cinnamon, vanilla, sugar cane, coffee and patchouli, and foodcrops consisting of cassava, sweet potato, banana, yam, maize and a variety of tropical, sub-tropical and in the dry by cool South-East monsoon, of temperate-climate vegetables. The settlements' acreage under sugar cane was doubled in 1960. Coffee was another popular crop with a number of settlers. Amongst the vegetables which found favour generally with the settlers, in 1960, and which sold very well, were cabbages, beetroots, carrots and cauliflowers. A cropping programme, for producing more and a larger variety of food-crops, has been planned for 1961.

139. Although, as stated in the 1959 Annual Report, the Mahe Land Settlement Scheme has now entered its consolidation stage, settlers are still encouraged to develop their settlements, especially by terracing the hill-sides. Some 11½ acres of hill-side were thus bench-terraced in 1960.

140. The livestock population of the settlements has increased in 1960, more than 20 new head of cattle having been acquired by settlers. Many more pigs and chickens were also kept. This is an encouraging development, as more farmyard and other organic manures will thus be available to the settlers for building up the fertility of their land.

141. The Land Settlement Officer succeeded in building two earth dams for the irrigation of terraced hill-sides. This cheap and practical way of providing irrigation water will be extended, when and if possible, in 1961.

142. The Land Settlement Scheme demonstration plot of Anse Boileau continued to operate in 1960 and, as stated in Section XI, was useful in demonstrating the growing of a variety of cash and food-crops.

143. As already stated in Section XI, a Field Instruction course was held at Anse Boileau on a vacant settlement plot for training young boys of primary-school leaving age in vegetable and food crop cultivation. The course has been both popular and successful.

144. As stated also in Section-XI, it is intended to convert Souvenir Crown Land into a plant nursery, in 1961, to supply various planting materials to settlers of the Land Settlement Scheme and to planters in general.

145. The formation in April and July, 1960, of the Anse Boileau and Foret Noire Small Farmers Cooperative Societies, whose members are settlers of the Land Settlement Scheme, is an interesting development, as they are the first farmers' cooperative societies to have been formed in the Seychelles. Both societies are promising.

XVI. — FORESTRY

146. The main forest areas, which consist of some 4,000 acres and are also the principal catchment areas of the islands of Mahe and Praslin,

are Government-owned. With generous grants from the Colonial Development and Welfare Fund, these areas have been largely re-afforested from 1950 onwards. There has been practically no re-afforestation work on private land.

147. In 1960, the Mahe Re-afforestation Scheme was extended to 1962 and the new Praslin Upland Conservation Scheme, whose main object is to establish a soil cover on, and eventually to re-afforest, the denuded slopes of Praslin and Curieuse islands, was approved and initiated. The Clearing of Bracken Fern Scheme, which had been approved in 1959 and which aims at clearing 1,500 acres of Crown and private forest land of the highly-inflamable bracken, continued also to be operated in 1960.

148. In the course of 1960, 120 acres of land were re-afforested on Mahe and 41½ acres on Praslin. On Curieuse island, 13 acres of denuded slopes were successfully planted with hardy and prostrate species. The total area re-afforested from 1950 to 1960 is now 2,580 acres.

149. Apart from plantings, work on Mahe has consisted, in 1960, in the maintainance and improvement of the already planted forests. Thus, 79 acres were brashed, to give access to plantations and to ensure knot-free timber, 160 acres were cut as first thinning and 173 acres were low-pruned and, in the case of older plantations, high-pruned to yield a longer run of knot-free timber at maturity. The usual practice of mulching first year plantings until they reach thicket stage was also continued in 1960. In order to obtain mulching material, citronella grass, which propagates readily from cuttings, grows well all the year round and does not run to inflamable death growth, was interplanted on newly re-afforested or on adjacent land. The Assistant-Forester has started a survey of the Sans Souci forest, in the Central Massif, in order to divide that forest into compartments which will eventually be mapped. The history and composition of each such compartment will be fully recorded. Sample plots will also be demarcated in suitable compartments for determining the annual increment in the volume data.

150. Although the works on Praslin started only in May, in spite of the deleterious effects of three months' dry weather, which resulted in a reduced re-afforested acreage, satisfactory progress has been obtained. Special attention was given to the Vallée de Mai, the home of the famous coco-de-mer palm. Endemic palms, pandani and trees are to be planted in that nature reserve to improve it and to erase the wounds of the new trans-island road, which unfortunately passes close to the valley.

151. Based on experience obtained in the Newcome forest of Praslin, the works on the denuded slopes of Curieuse island were started in June. They have consisted essentially in the digging of stabilization trenches, 9 inches wide and 3 feet apart, along the contour of the slopes.

These trenches were planted with hardy species like cashew and coco-plum. Strips of the prostrate Gazon Trelle were planted between the trenches. It is hoped that the establishment of these hardy and prostrate species will result in adequate soil stabilization, to enable the establishment, several months later, of less hardy, soil improving, species like *Calopogonium*, *Asystasia*, *Eugenia* spp. and *Glyricidia*.

152. No new exotic species were introduced in 1960. Some 3 lbs. of Central Mahogany seed were however imported to mix this good quality timber species amongst the new plantations.

153. The trial plots of exotic species, started in 1959, were maintained in 1960 and increased by 1/10th acre, for planting *Eucalyptus globulosa*, from seeds obtained locally. A rare local endemic, Bois de Natte, was in the process of being planted on a trial plot at the end of the year. Growth rates recorded in 1960 on the trial plots were as follows :—

	Average height in inches
Central American Mahogany	48
Bois Jaune	48
Chittagong wood	36
Acrocarpus fraxinifolius	30

154. The Eradication of Bracken Fern campaign, which had been started on Mahe Crown Lands in 1959, was pursued and was also extended to private lands in 1960. Satisfactory progress has been obtained. Up to the 31st December, 1960, 1,025 acres of Crown Land and some 200 acres of private land had been cleared of bracken fern. The work on Crown Land was carried out by the Forestry Division personnel while that on private land was either carried out by the private owners themselves or, in exceptional cases, by forestry personnel. In the first case, subsidy at the rate of Rs. 15 per acre, was paid to the owners concerned. Through this eradication campaign the serious fire risk constituted by the highly-inflammable bracken fern, during the dry South-East moonsoon, is receding.

155. To diminish the risk of forest and bush fire on Crown and private lands the 30 miles of fire break, through and around Crown Lands, were widened from 30 to 60 feet and a fire control organization was set up on Mahe by the Chief Police Officer and the Forester. This organization consists of a number of voluntary fire teams which have been assigned definite areas to protect. In this way the Forestry Division fire teams will be able to concentrate in the fighting of fires on Crown Lands, eventually, while the planned action of the private fire teams should minimize the risk of fire spreading from one area to another. It is intended to set up similar organizations on other populated islands.

Cashew	<i>Anacardium occidentale</i>
Coco-plum	<i>Chrysobalanus icaco</i>
Gazon Trelle	<i>Panicum parvifolium</i>
Central American Mahogany	<i>Swietenia macrophylla</i>
Bois de Natte	<i>Mimosops</i> sp.
Bois Jaune	<i>Ochrosia borbonica</i>
Chittagong wood	<i>Chikrassia tabularis</i>

156. It is satisfying to be able to record only four minor forest fires in 1960, in spite of marked dry conditions during the South-East moonsoon.

157. In 1960, as in previous years, the Forestry Division continued to exploit forest produce in the Crown Forests and was able to supply the Public Works Department with practically all its requirements in timber for its Development building programme. The Forestry personnel was also engaged, in 1960, in the supervision of the cropping, by contractors, of cinnamon products on Crown Lands. Details about Crown Forest produce are contained in Appendix H.

XVII. — MISCELLANEOUS

158. The Director of Agriculture, Mr. G. Lionnet, was made a Member of the Order of the British Empire (M. B. E.) Civil Division, in the Birthday Honours List.

159. While on overseas leave, the Director of Agriculture attended in Rome, in May, the Third Session of the Group on coconut and Coconut Products of the Food and Agriculture Organisation of the United Nations and, from the end of August to the end of September, the 1960 Commonwealth Agricultural Bureaux Review Conference, in the United Kingdom.

160. Mr. I. Woodroffe, the Officer Administering the Government, formally opened the Agronomist's Laboratory and Office, at Grand Anse, on the 11th August, 1960.

161. The Entomologist, Dr. I. W. B. Nye, who had been assigned to the Seychelles in 1959, from the Colonial Pool of Entomologists, left in May, 1960, after successfully completing the Praslin Anti-Melittomma campaign and initiating a similar campaign on Mahe. During his tour in the Seychelles, Dr. Nye devised a very effective method of *Melittomma* control.

162. Mr. J. W. Savy, the new Land Settlement Officer, assumed duty on the 1st February, 1960, and has since then been active in promoting the Land Settlement Scheme.

163. During the overseas leave of the Director of Agriculture from March to November, 1960, he was ably replaced by the Agricultural Officer, Mr. S. M. Savy, who acted as Director.

164. Overseas visitors to the Department and Botanic Gardens in 1960 included :

Dr. G. B. Pickering,	Tropical Products Institute.
Mr. B. H. Baker,	Geologist of the Kenya Department of Mines and Geology.
Mr. H. Legrand,	Chargé de Mission, Paris Muséum d'Histoire Naturelle.
Dr. J. Hurrell Crook,	Field Station for the Study of Animal Behaviour, Cambridge University.

Mr. H. O. V. Jensen,	Seychelles Government Representative in the United Kingdom.
Mr. R. E. Anderson, O.B.E.,	Seychelles Government Representative in East Africa.
Mr H. Macdonald-Hastings,	A United Kingdom journalist and television commentator.
Mr. A. Orian,	Entomologist of the Mauritius Department of Agriculture.

165. Four meetings of the Agricultural Board were held in 1960, at two of which Dr. G. B. Pickering and Mr. R. E. Anderson addressed the Board.

GUY LIONNET,
Director of Agriculture.

14th February, 1961,
Headquarters,
Department of Agriculture,
Victoria Mahe.

APPENDIX A

Total Rainfall and Air Temperature at Victoria.

Months	Rainfall in inches		Average Rainfall for last 60 years	Air Temperature (Fahrenheit) for 1960		Lowest Minimum
	1960	1959		Mean Maximum	Mean Minimum	
January	10.58	19.00	7.25	85.0	77.7	73.9
February	16.65	8.22	23.93	85.7	76.5	71.0
March	5.21	6.57	4.09	87.4	77.7	75.1
April	7.24	7.38	5.13	87.6	77.4	75.3
May	2.68	4.05	10.42	86.9	78.2	75.1
June	2.09	0.81	10.64	83.5	77.0	73.3
July	2.74	0.69	4.53	82.1	75.4	71.9
August	1.29	1.40	0.88	81.3	75.0	72.1
September	0.43	4.59	1.13	82.0	76.6	73.1
October	7.83	4.96	0.61	82.6	76.0	69.1
November	2.73	9.11	6.03	84.4	75.0	72.5
December	14.51	12.41	14.75	85.0	76.0	73.6
Total	73.98	79.19	89.39	90.61	—	—

Total Rainfall at Other Recording Stations in 1960.

Mahe, Mont d'Or	78.40	1,300 feet above sea level
" Grand'Anse	90.32	at sea level
Praslin	66.15	at sea level
La Digue	60.99	at sea level

APPENDIX B

TABLE I

**Copra Production for Export and Actual Exports
1956 to 1960.**

<i>Year</i>	<i>Production Metric Tons</i>	<i>Value f. o. b. Rupees</i>	<i>Export Metric Tons</i>	<i>Value f. o. b. Rupees</i>
1956	5,738	4,783,333	5,579	4,589,233
1957	6,000	5,257,398	5,900	5,176,198
1958	5,605	5,492,451	5,599	5,447,063
1959	4,570	5,452,225	4,406	5,238,346
1960	4,921	4,854,264	4,689	4,768,419

TABLE II

Cinnamon Leaf Oil Exports 1956 to 1960.

<i>Year</i>	<i>Quantity in Tons (Long Tons)</i>	<i>Value in Rupees f. o. b.</i>
1956	95	879,494
1957	58	555,313
1958	82	582,026
1959	91	876,239
1960	60 $\frac{3}{4}$	610,085

TABLE III

Cinnamon Bark Exports 1956 to 1960.

<i>Year</i>	<i>Quantity in Tons (Long Tons)</i>	<i>Value in Rupees f. o. b.</i>
1956	586	251,665
1957	596	251,667
1958	1,063	723,662
1959	1,048	799,615
1960	986 $\frac{1}{2}$	821,843

TABLE IV

Cinnamon Quills and Quilling Exports 1957 to 1960.

<i>Year</i>	<i>Quantity in Tons (Long Tons)</i>	<i>Value in Rupees f. o. b.</i>
1957	8 $\frac{1}{4}$	35,000
1958	5 $\frac{1}{2}$	27,500
1959	3 $\frac{3}{4}$	24,849
1960	9	25,760

APPENDIX B — (Contd.)

TABLE V

Vanilla Exports 1956 to 1960.

<i>Year</i>	<i>Quantity in Kilogrammes</i>	<i>Value in Rupees f. o. b.</i>
1956	7,580	285,615
1957	4,245	195,182
1958	6,000	423,025
1959	4,510	485,156
1960	7,575	539,481

TABLE VI

Patchouli Leaf and Oil Exports 1956 to 1960.

<i>Year</i>	<i>Oil Exports</i>		<i>Leaf Exports</i>	
	<i>Kilogrammes</i>	<i>Rupees f. o. b.</i>	<i>Tons</i>	<i>Rupees f. o. b.</i>
1956	532	27,225	9	16,013
1957	1,200	50,450	7½	14,789
1958	103	4,156	10	20,468
1959	252	14,017	12¾	35,499
1960	435	24,600	11¾	40,204

TABLE VII

Exports of Dry-Salted Fish (Including Shark and Sharkfins) 1956 to 1960.

<i>Year</i>	<i>Quantity in Tons (Long Tons)</i>	<i>Value in Rupees f. o. b.</i>
1956	240	213,103
1957	183½	169,669
1958	147	133,788
1959	120½	93,660
1960	82¼	78,751

APPENDIX C

Sea-Bird Egg Collections

The following table gives the declared landings of eggs from the egg-islands in 1960 :

<i>Island</i>	<i>No. of cases</i>
Aride	213
North Cousin	—
South Cousin	14
Farquhar	47
Desnoeufs	close year
Frigate	101
Bird	unavailable
Recif	56
Eagle	unavailable
African Banks	67
Total	498

It can be assured that each case contained an average of 700 eggs.

APPENDIX D

Staff as at 31st December 1960

<i>Appointment</i>	<i>Name</i>	<i>Remarks</i>
HEADQUARTERS		
Director of Agriculture	J. F. G. Lionnet M.B.E., Dip. Agric. (Maur.)	Promoted on 1st March, 1960, with retrospec- tive effect to 1st January 1960.
Inspector of Plantations & Manager Botanic Gardens	A. Gendron	
Probationer Technician	F. Vidot	Joined on 18th July.
Chief Clerk	D. Pothin	Transferred from Treasury on 1st December.
Store-Keeper and Paymaster	L. Ah-Tou	
Paymaster Stations and Sub-Stations	P. Sinon	
Typist	Miss M. Leong-Kee	Transferred from Treasury on 1st September.
Typist	Mrs. W. Bossy	Transferred from Labour and Wel- fare Office on 27th June.
Typist	Miss L. Ah-Tive	Joined on 16th August.
Messenger	R. Cedras	Retired on 31st December.
RESEARCH STATION		
Agronomist	C. J. Piggott B.Sc. Sonc. Agric. (Read.), Dip. Agric. Sci. (Cantab.), D. T. A. (Trin.)	
Farm Manager	H. Buron	Transferred from Curieuse Island on 30th March.
Laboratory-Assistant	F. Frichot	
Laboratory-Attendant	T. Marie	Joined on 1st May.
Laboratory-Attendant	J. Norah	Joined on 23rd May.

APPENDIX D — (Contd.)

<i>Appointment</i>	<i>Name</i>	<i>Remarks</i>
Clerk	A. Uzice	Transferred from Control of Supplies on 21st March.
Assistant-Clerk	A. Mathurin	Joined on 1st September.
Draughtsmen	G. Gontier	Joined on 13th June.
Coconut Nursery Supervisor	A. Pool	Joined on 8th September.
Coconut Nursery Supervisor	A. Antat	Joined on 8th September.

EXTENSION SERVICES

Agricultural Officer	S. M. Savy B.Sc. Agric. (Glasgow), Dip. Agric. Sci. (Cantab.), D.T.A. (Trin.)	Acted as Director from 31st March to 14th November. Took charge of Pest Control Scheme on departure of Entomologist in May.
Agricultural Officer	Vacant	

ANIMAL HUSBANDRY AND VETERINARY

Stock Inspector	D. Morgan	Returned from Training Course in Kenya on 15th March.
Technician	R. Albert	Was on training course in Nyasaland from 16th February to end of the year.
Farm and Dairy Manager	P. Chang-Ty-Sing	Acted from 9th November to the end of the year.
Livestock Supervisor	R. Baker	Transferred from Grand'Anse farm on 17th October.

PEST CONTROL

Senior Melittomma-Supervisor	J. Dookly	Was on the diploma course of the Mauritius Agricultural College during the whole year.
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APPENDIX D — (Contd.)

<i>Appointment</i>	<i>Name</i>	<i>Remarks</i>
Senior Melittomma-Assistant	T. Didon	
Melittomma Assistant	P. Dick	
do	J. B. Chang-Thiou	
do	M. Naiken	
do	O. Charles	
do	S. Valentin	
do	H. Gendron	
do	L. Canny	
do	I. Bijoux	
do	A. Chang-Pen-Tive	
do	T. Julius	Joined on 1st April.
do	A. Desaubin	Joined on 15th May.
do	M. Roselie	Joined on 15th May.
Clerk	M. Joubert	

PRODUCE INSPECTION AND ROUTINE LABORATORY

Laboratory-Assistant	P. Loustau-Lalanne	
Junior Laboratory-Assistant	K. St. Ange	Joined on 1st November.
Laboratory-Attendant	S. Accouche	
Produce Inspector	B. Paton	

CROWN LAND SUPERVISION AND ADMINISTRATION

Manager Ste. Anne Island	F. Benoiton	
Manager Curieuse Island	R. de Lafontaine	Transferred from Grand'Anse on 29th March.
Technician	W. Figaro	Transferred from Pest Control in May.

LAND SETTLEMENT

Land Settlement Officer	J. W. Savy	Joined on 1st February.
Technical Officer	R. Dubuisson B.E.M.	
Technical Officer	J. Barbier	
Technician	J. Pool	

APPENDIX D — (*Contd.*)

<i>Appointment</i>	<i>Name</i>	<i>Remarks</i>
Technician	B. Tall	Transferred from Anse Boileau to L'Amitie, Praslin, in August.
Technician	R. de Lafontaine	

FORESTRY

Forester	F. Strawbridge	
Assistant-Forester	A. Moulinie	
Senior Forest Ranger, Praslin	E. Pool B.E.M.	
Forest Ranger, Le Niol	M. Delpech	
Forest Ranger, Grand'Anse	W. Andre	
Forest Apprentice	B. Agrippine	
Forest Apprentice	A. Samson	

APPENDIX E

The Agricultural Board consisted of the following members in 1960 :—

The Director of Agriculture — Chairman

The Honourable F. W. Parsons

The Honourable H. Savy

Mr. D. Bailey O.B.E., J.P.

Mr. R. Delpech J.P.

Mr. J. Dick

Mr. J. Hadee

Mr. W. MacGaw

Mr. E. Nageon de Lestang

Mr. N. Pardiwalla

Mr. K. St. Ange

APPENDIX F

The following legislation affecting agriculture was enacted in 1960 :—

- Ordinance No. 10 of 1960 : An Ordinance to amend the sale of Produce Ordinance.
- Ordinance No. 12 of 1960 : An ordinance to amend the Animals (Diseases and Importation) Ordinance.
- Ordinance No. 14 of 1960 : An ordinance to amend the Sugar Cane and Bacca Ordinance.
- Ordinance No. 22 of 1960 : An ordinance to amend the Manufacture and Control of Toddy Ordinance.
- Ordinance No. 23 of 1960 : An Ordinance to amend the Employment of Servants Ordinance.
- Ordinance No. 38 of 1960 : An Ordinance to amend the Employment of Servants Ordinance.

APPENDIX - G

AGRICULTURAL PRODUCE FROM CROWN LANDS

(a) *Coconuts and Copra*

Coconut Collection were as follows :—

<i>Origin</i>	<i>Number Collected</i>
Grand'Anse	216,561
Anse Boileau	66,081
Forêt Noire	103,275
Union Vale	48,620
St. Anne Island	243,609
Curieuse Island	165,192
Amitié Estate	147,077
Long Island	12,469
Minor Praslin Crown Land	12,102
Minor Mahe Crown Lands	12,897
Total	1,027,883

Disposal of coconuts were as follows :—

Stock on 1.1.60	40,459	Converted into copra	406,491
Collection	1,027,883	Sales and free issues	431,480
		Bad nuts	6,606
		Stock on 31.12.1960	223,765
	<u>1,068,342</u>		<u>1,068,342</u>

Copra Production (Kilogrammes)

Stock on 1.1.60.	879	Consigned for export	60,481
Production	61,617	Sold by tender (2nd grade)	1,885
		Difference in weight	130
	<u>62,496</u>		<u>62,496</u>

(b) *Cinnamon Products*

Cinnamon leaf and bark sold by tender :—

Leaf	527,335 Kgs.
Green scraped bark	50,301 "
Green unscraped bark	597,522 "
Cinnamon Quills for export	922 "
Cinnamon Quillings for export	371 "

APPENDIX G — (Contd.)

(c) *Sugar Cane and Bacca*

48.304 tons of sugar cane were supplied to the Victoria Bacca Club in 1960. 7,050 bottles of bacca were supplied by the Bacca Club for sale at Grand'Anse.

(d) *Milk*

A total of 256,733 pints of milk were produced at the Union Vale dairy, 221,053 pints of which were supplied to Government institutions and were sold to 260 customers. The rest, 35,680 pints, were fed to young stock.

A total of 7,147 pints of milk were produced on the Grand'Anse farm, 4,322 pints of which were sold or issued free of charge and 2,825 pints fed to young stock.

APPENDIX H

FOREST PRODUCE FROM CROWN LANDS
TIMBER RUNNING FEET

<i>Timber species</i>	<i>Planks</i>	<i>Madrier</i>	<i>Beams</i>	<i>Posts</i>	<i>Rondins</i>
Albizzia	43,627	114,007	—	—	—
Agati	4,274	189	—	—	—
Badamier	—	—	—	—	—
Breadfruit	1,279	640	339	—	—
Bois de table	545	108	—	—	—
Bois Rouge	—	—	—	1,098	—
Casuarina	—	—	—	40	—
Capucin	—	—	—	1,160	—
Calice du pape	377	105	—	2,634	28
Eucalyptus	—	544	240	372	—
Jack	—	154	—	—	—
Sangdragon	191	22	—	—	—
Santol	200	8,545	—	—	425
Takamaka	788	809	—	—	568
Teak	—	94	77	—	5
	<u>51,281</u>	<u>125,217</u>	<u>656</u>	<u>5,304</u>	<u>1,026</u>

OTHER FOREST PRODUCE

Cordwood Crown Lands	289 cords
Cordwood C. D. & W. Plantations	339 „
Vanilla Beans	6,377 Green Beans

Madriers are planks 2 inches thick

Rondins are round pieces of wood

APPENDIX I

PRINCIPAL WORKS BEARING ON THE AGRICULTURAL AND RELATED INDUSTRIES OF THE SEYCHELLES

- ANONYMOUS. *Soils from Seychelles.* Bull. Imp. Inst. Vol. 30. 1932.
- A Plan for Seychelles.* Sey. Govt. 1959.
- BAILEY D. *List of the flowering Plants and Ferns of the Seychelles.* Sey. 1961.
- BROWN E. S. *The Biology of the Coconut Pest Melittomma insulare (Col., Lymexylonidae), and its control in the Seychelles.* Bull. Ent. Res. Vol. 45 1954.
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A P P E N D I X J

LOCAL MEASURES AND CONVERSION TABLE

1 Arpent	1.043 acres
1 French foot	1.06 English feet
1 Gaulette	10 French feet or 10.6 English feet
1 Metric Ton	1,000 kilogrammes
1 Long Ton	1,016 „
1 Kilogramme or Kilo	1,000 grams
1 English Pound	453.6 grams
1 French Pound	500 grams
1 Ell	4 English feet or 3.77 French feet
1 Hundredweight	50.803 kilogrammes
1 Cord	48 Cubic feet (French) or 50.08 cubic feet (English)
1 Litre	1,000 cubic centimetres
1 Bottle	$\frac{2}{3}$ of a litre or 666.6 cubic centimetres
1 Chopine	$\frac{1}{3}$ of a litre or 333.3 cubic centimetres
1 Quart	$\frac{1}{2}$ of a chopine or 166.6 cubic centimetres
1 Gallon	4.546 litres
1 Touque	22 litres
1 Velte	$\frac{1}{3}$ of a touque or 7.333 litres
1 Rupee	1/6 sterling

Printed by the Government Printer at the Government Printing Office,
Victoria, — Mahé, Seychelles.

